

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1. (Currently amended) A ceramic heater-type glow plug comprising:

a ceramic heater;

a metallic outer sleeve one end portion of which holds the ceramic heater and the other end portion of which is fixed in an inner hole of a housing;

an electrode lead-out member which is connected to one electrode of the ceramic heater ~~in the~~ at a connecting portion, the connecting portion being disposed inside of the metallic outer sleeve; and

an insulating material ~~which is filled of a~~ polycrystalline solid having a high rigidity and disposed to ~~fill~~ in the metallic outer sleeve as a sealing material, wherein; and

a granulated powder of a low rigidity and made of an inorganic insulating material is ~~filled~~ disposed to fill the metallic outer sleeve externally around ~~at~~ the connecting portion of the ceramic heater and the electrode lead-out member.

2. (Currently amended) A ceramic heater-type glow plug according to claim 1, wherein a small-diameter portion is formed on an end portion of the ceramic heater which is positioned ~~outside~~ inside the metallic outer sleeve, and the one electrode of the ceramic heater and the electrode lead-out member are connected to each other on the small-diameter portion.

3. (Previously presented) A ceramic heater-type glow plug according to claim 1, wherein the granulated powder is formed of a granulated material made of fine powder with primary particles having a particle size of 5 μm or less.

4. (Currently amended) A ceramic heater-type glow plug according to claim 1, wherein a particle size of the ~~granulated material~~powder is from 30 to 200 μm .

5. (Currently amended) A ceramic heater-type glow plug according to claim 1, wherein the insulating material of a polycrystalline solid of high rigidity filled in the inside of the metallic outer sleeve is a heat-resistant insulating powder which is brought into a highly dense state by swaging after being filled.

6. (New) A ceramic heater-type glow plug comprising:
a ceramic heater element having a body portion and an electrode;

a metallic outer sleeve having a hollow interior, a distal end portion in which said ceramic heater element is disposed, and a proximal end portion configured for being fixed within a housing of an engine;

an electrode lead-out member connected to said electrode at a connection area disposed within said hollow interior of said metallic outer sleeve;

a granulated powder of a low rigidity and made of an inorganic insulating material disposed in said hollow interior of said metallic outer sleeve externally around said connection area; and

an insulating material of a high rigidity disposed in substantially all remaining areas of said hollow interior of said metallic outer sleeve.

7. (New) The ceramic heater-type glow plug according to claim 6 wherein said insulating material is disposed externally of said body portion.

8. (New) The ceramic heater-type glow plug according to claim 6, wherein said ceramic heater element has a distal end which projects beyond said distal end portion of said metallic outer sleeve and a proximal end disposed in said distal end portion of said metallic outer sleeve, said proximal end of said ceramic heater element having a reduced-diameter portion forming part of said connection area between said electrode lead-out member and said electrode, said granulated powder being disposed around said reduced-diameter portion between an interior surface of said metallic outer sleeve and said reduced-diameter portion.

9. (New) The ceramic heater-type glow plug according to claim 6, wherein said ceramic heater element has a distal end which projects from said distal end portion of said metallic outer sleeve and a proximal end disposed in said distal end portion of said metallic outer sleeve, said proximal end of said ceramic heater element having a diameter less than an interior diameter of said distal end portion of said metallic outer sleeve such that an annular space is defined substantially radially between said proximal end of said ceramic heater element and said metallic outer sleeve, said granulated powder being disposed in the annular space.

10. (New) The ceramic heater-type glow plug according to claim 9, wherein said electrode lead-out member includes a cup-shaped part on a distal end thereof and a coil on a proximal end thereof, said cup-shaped part engaging said proximal end of said ceramic heater element, said glow plug further including an electrode lead-out rod of a conductive

metal having a distal end disposed in and electrically connected to said coil, said electrode lead-out rod having a proximal end for connection to an external contact terminal, and said insulating material fixing said electrode lead-out member and said electrode lead-out rod within said metallic outer sleeve.

11. (New) A ceramic heater-type glow plug comprising:
 - a ceramic heater;
 - a metallic outer sleeve one end portion of which holds the ceramic heater and the other end portion of which is fixed in an inner hole of a housing;
 - an electrode lead-out member which is connected to one electrode of the ceramic heater in the inside of the metallic outer sleeve;
 - an insulating material which is filled in the metallic outer sleeve as a sealing material; and
 - a granulated powder made of an inorganic insulating material is filled around a connecting portion of the ceramic heater and the electrode lead-out member, and a particle size of the granulated powder is from 30 to 200 μm .